

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave.St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 1.28**WELDING INSPECTION REPORT****Resident Engineer:**Siegenthaler, Peter**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-017892**Date Inspected:** 03-Nov-2010**Project Name:** SAS Superstructure**OSM Arrival Time:** 630**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1500**Contractor:** American Bridge/Fluor Enterprises, a JV**Location:** Job Site**CWI Name:** See Below**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Orthotropic Box Girders**Summary of Items Observed:**

At the start of the shift the Quality Assurance Inspector (QAI) traveled to the project site and observed the following work performed by American Bridge/Fluor Enterprises (AB/F) personnel at the locations noted below:

A). Field Splice W6/W7

B). Field Splice W7/W8

C). Field Splice E7/E8

A). Field Splice W6/W7

The QAI observed the continued Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) 6W-7W-C1 and C2. The Complete Joint Penetration (CJP) was performed by the welder /operators Rory Hogan ID-3186 and Jeremy Dolman ID-5042 utilizing the WPS ABF-WPS-D15-3042A, Rev. 1. The WPS was also used by the QC inspector William Sherwood as a reference when monitoring the welding and verifying the welding parameters which were observed as follows: 250 amps, 24.2 volts and a travel speed measured as 185 mm. The QC inspector also verified the minimum preheat temperature of 100 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. The welding was performed in the overhead (4G) position with the work at approximate incline of 22 degrees. The CJP welding of the "B" face of the joint was not completed during this scheduled shift.

The QAI also observed the Ultrasonic Testing (UT) of the side plate field splice identified WN: 6W-7W-E1 and E2. The testing was performed by the QC technician Tom Pasqualone utilizing a G.E./Krautkramer USM 35X.

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The examination of the Complete Joint Penetration (CJP) was conducted utilizing UT Procedure identified as SE-UT-D1.5-CT-100 Rev.4 and the applicable contract documents. The QC technician performed the required longitudinal wave technique, utilizing a 25.4mm diameter transducer, to perform the examination for base metal soundness and the shear wave technique for the examination of weld soundness which was performed utilizing a 16mm x 19mm rectangular transducer. The testing performed on this scheduled shift was not completed.

### B). Field Splice W7/W8

The QAI observed the excavation of the unacceptable discontinuities on the deck plate field splice identified as WN: 7W-8W-A, repair cycle # R2. The rejectable discontinuities was discovered during the Ultrasonic Testing (UT) performed by the QC technicians, Steve McConnell and the discontinuities appeared to travel in the longitudinal direction of the weld axis. The excavations of the rejected areas was performed by AB/F personnel Ken Chappell utilizing a high cycle grinder to remove the defects and a rotary file to bring the excavated area into compliance with the Weld Procedure Specification (WPS) ABF-WPS-D15-1001 Repair, Rev. 0. At the conclusion of the excavations the QAI observed the QC inspector, Steve McConnell, performed a visual inspection and a Magnetic Particle Test (MPT) of the excavated areas and no rejectable indications were noted. At the conclusion of the VT and MPT, the welder commenced the welding of the repair which was identified with the following Y coordinate; Segment A1, Y=145 mm and Segment A5, Y=5135 mm. The welding was performed by Fred Kaddu ID-2188 utilizing the Shielded Metal Arc Welding (SMAW) process as per the WPS which was also utilized by the QC inspector to monitor the welding and to verify the DC welding parameters. The QC inspector verified the DC welding parameters as 161 amps and the minimum preheat temperature of 40 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius appeared to comply with the contract documents. The welding was performed in the flat (1G) position utilizing a 3.2 mm and 4.0 mm low hydrogen electrode. The welding of the repairs was completed during the scheduled shift. The QAI also verified the dimensions of the excavations and were noted and recorded as follows; Segment A1 Y=145 mm, L=135 mm, d=20 mm, Segment A2, Y=3080 mm, L=85 mm, d=14 mm and Segment A2, Y=3200 mm, L=85 mm, d=14 mm.

### C). Field Splice E7/E8

The QAI observed the continued automatic Flux Cored Arc Welding (FCAW-G) of the weld joint identified as Weld Number (WN) E7-E8-E1. The Complete Joint Penetration (CJP) welding was performed by welding personnel Song Tao Huang, ID-3794 utilizing the WPS ABF-D15-3042B-1, Rev. 0. The joint designation appeared to comply with AWS single-v-groove butt joint identified as B-U2a-G. The WPS was also used by the QC inspector William Sherwood as a reference to monitor the welding and to verify the DC welding parameters which were noted and recorded by the QC as follows: 265 amps, 22.7 volts and a travel speed measured as 337 mm per minute. The welding was performed in vertical position (3G) at approximate incline of 22 degrees. The QC inspector also verified the minimum preheat temperature of 60 degrees Celsius and the maximum interpass temperature of 230 degrees Celsius. Later during the shift the QAI observed, at random intervals, the QC inspector monitoring the in process welding, the surface temperatures and verifying the welding parameters. The welding of the side plate field splice, face "A" was not completed during this scheduled shift.

### QA Observation and Verification Summary

The QA inspector observed the QC activities and the welding of the field splices utilizing the WPS as noted above,

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which appeared to be posted at the weld station. The welding parameters and surface temperatures were verified by the QC inspector and utilizing a Fluke 337 clamp meter for the electrical welding parameters and a Fluke 63 IR Thermometer for verifying the preheat and interpass temperatures. The ESAB consumables utilized for the SMAW welding process appeared to comply with the AWS Specification and AWS Classification. The QC inspection, testing and welding performed on this shift appeared to be in general compliance with the contract documents. At random intervals, the QAI verified the QC inspection, testing, welding parameters and the surface temperatures utilizing various inspection equipment and gages which included a Fluke 337 Clamp Meter and Tempilstik Temperature indicators.

The digital photographs below illustrate the work observed during this scheduled shift.



### Summary of Conversations:

There were general conversations with Quality Control Inspector Bonifacio Daquinag, Jr. at the start of the shift regarding the location of American Bridge/Fluor welding, inspection and N.D.E. testing personnel scheduled for this shift.

The QAI was advised by QA Supervisor, William Levell, regarding the "A" deck erection Hole Insert plate identified as 1E-PP8.5-E4-W1, R3 that the Weld Repair, submitted by AB/F was verbally approved to proceed by Pat Lowry on Tuesday, 11/02/10.

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mohammad Fatemi (916) 813-3677, who represents the Office of Structural Materials for your project.

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<b>Inspected By:</b>	Reyes, Danny	Quality Assurance Inspector
<b>Reviewed By:</b>	Levell, Bill	QA Reviewer

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